

Math Academy 2011

Julie McFarland and Sheila McDonald

Shift 3 & 5

Picture three
quarters in your
mind.

Discussion

○ Notes:

CRA (Concrete, Representational and Abstract)

- Concrete- using manipulatives – Sticks, pattern blocks, or chips.
- Representational- Drawing pictures to represent the manipulatives.
- Abstract- Using only numbers and mathematical symbols.

Shift #3

- Have students draw, describe, model, and visualize mathematics.

Rationale

- Very rarely do the students process, see, or feel the math being taught in the same way the teacher see it.
- Our presentations and explanations need to be shown in many different ways and we need to rely on our students to explain their thinking and describe the various ways they see the math.

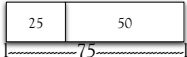
Power statements

- How do you see it?
- Explain how you knew that.
- Show me!
- Draw it.

How do we do this?

- Provide opportunities for students to draw, to describe, to model, and to visualize.
 - ie- Draw 3 different pictures of $2\frac{3}{4}$
- Math Journals- draw your visualizations, etc.
- Think - Pair - Share
- Use Investigations

What should be in an effective mathematics classroom?

- Frequent use of pictures.
 - Frequent use of the number line and bar models-
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- Frequent opportunities for students to draw or show, then describe their thinking.

Journal

- How will your teaching change because of the use of Shift #3?
 - Time?
 - Use of math journal?

Shift #5

Tom has \$10.00.
Sandwiches cost \$1.89
each. What is the greatest
number of sandwiches
that Tom can buy?

Discussion

- Our brightest students are going to round it to \$2 each and find that you can buy 5 sandwiches with just a little bit of number sense.
- Our weakest students too often foolishly struggle with finding the quotient of of \$1.89 divided by 10 to answer this problem.

Shift #5

- Build number sense.

Rationale

- Number sense- comfort with numbers, is one of the biggest goals of mathematical learning.
- There is a great need for us to develop a mature sense of place value in all students. It is much more than asking the value of digit and places.

Power statements

- About how much is that?
- What is 10 or 100 or 1000 more or less?
- What is ten times that number?
- What is the most or greatest? How do you know?
- What is the least or smallest? How do you know?
- What else can you tell me about these numbers?

How do we do this?

- Every number that emerges during a math class presents a golden opportunity to strengthen number sense.
- Focus on place value throughout the year- not just in Chapter 1.
- Questioning and discussing.

What should be in an effective mathematics classroom?

- Great focus on estimation and justify estimates.
- Focus on place value.
- Frequent discussion and modeling about how to use number sense to “outsmart” the problem.
- Put calculator aside - estimate and compute mentally.

Task/Plan

- Journal- How will your teaching change because of the use of Shift 5?
- In teams of two, continue working with the same lesson from Envision, this time addressing only the “Concrete” and “Representational” stages of the Core and More lesson plan. Include a reference on how you would use Investigations to supplement the concrete portion of the lesson.